

Amendments to the Claims:

1. (Currently Amended) A method of producing an assembly comprising at least one component, said method comprising:  
mapping ~~the~~ a fabricated component and thereafter electronically displaying an electronic three-dimensional actual model representative of the component based upon said mapping;  
comparing the actual model to an electronic display of a three-dimensional authority model;  
altering a position of at least one of the actual model and the authority model based upon said comparing such that the authority model and the actual model at least partially align;  
performing a machine operation on the component based upon said altering the position of at least one of the actual model and the authority model; and  
dynamically displaying the actual model such that the actual model is automatically and repeatedly updated as the position of at least one of the actual model and the authority model is altered and the machine operation is performed.
2. (Previously Presented) A method according to Claim 1 further comprising designing at least one electronic three-dimensional authority model of the component before mapping the component, wherein the authority model is based upon at least one feature of the component.
3. (Previously Presented) A method according to Claim 2, wherein said designing comprises designing an authority model based upon at least one authority feature of the component and at least one attributed tolerance, wherein said mapping comprises mapping at least one actual feature of the component, and wherein said comparing comprises comparing the actual model and the authority model based upon the at least one authority feature and at least one attributed tolerance and the at least one actual feature.
4. (Previously Presented) A method according to Claim 1, wherein the actual model comprises actual model data set, wherein the authority model comprises authority model data set,

and wherein said comparing comprises determining a best fit of the actual model with the authority model from the actual model data set and the authority model data set.

5. (Previously Presented) A method according to Claim 1, wherein said mapping comprises mapping the component based upon a location and orientation of the component relative to a flexible tool, wherein said comparing comprises comparing the authority model and the actual model based upon the location and orientation of the component.

6. (Previously Presented) A method according to Claim 5, wherein comparing comprises comparing the authority model and the actual model further based upon a temperature of the component and a temperature of a local environment of the component.

7. (Previously Presented) A method according to Claim 1 further comprising fabricating the component before mapping the component.

8. (Previously Presented) A method according to Claim 7, wherein fabricating the component comprises generating at least one numerical control program from at least one three-dimensional authority model and thereafter machining the component based upon the at least one numerical control program.

9. (Previously Presented) A method according to Claim 1, wherein said comparing further comprises automatically and repeatedly comparing the actual model and the authority model as the machine operation is performed.

10. (Previously Presented) A method according to Claim 1 further comprising repeatedly transferring data representative of the actual model while dynamically displaying the actual model, wherein transferring comprises transferring the data to a remote location.

11. (Currently Amended) A system for producing an assembly comprising at least one component, said system comprising:

at least one metrology device capable of mapping ~~the~~ a fabricated component;

a workstation processing element capable of electronically displaying an electronic three-dimensional actual model representative of the component based upon the mapping of the component, wherein said workstation processing element is capable of comparing the actual model to an electronic display of a three-dimensional authority model, wherein said workstation processing element is capable of altering a position of at least one of the actual model and the authority model based upon the comparison such that the authority model and the actual model at least partially align; and

a numerical control apparatus capable of performing a machine operation on the component based upon the altered position of at least one of the actual model and the authority model,

wherein said workstation processing element is capable of dynamically displaying the actual model as the workstation processing element alters the position of at least one of the actual model and the authority model and as the numerical control apparatus performs the machine operation such that the electronic display of the actual model is automatically and repeatedly updated as the position is altered and the machine operation is performed.

12. (Previously Presented) A system according to Claim 11 further comprising a computer-aided drafting and manufacturing element capable of designing the authority model of the component based upon at least one feature of the component.

13. (Previously Presented) A system according to Claim 12, wherein said computer-aided drafting and manufacturing element is capable of designing an authority model based upon at least one authority feature of the component and at least one tolerance, wherein said at least one metrology device is capable of mapping at least one actual feature of the component, and wherein said workstation processing element is capable of altering a position of at least one of

the actual model and the model based upon the at least one authority feature and the at least one tolerance and the at least one actual feature.

14. (Previously Presented) A system according to Claim 11, wherein the actual model comprises actual model data set, wherein the authority model comprises at least one authority data set, and wherein said workstation processing element is capable of comparing by determining a best fit of the actual model with the authority model from the actual model data set and the authority model data set.

15. (Previously Presented) A system according to Claim 11, wherein said at least one metrology device is capable of mapping the component based upon a location and orientation of the component relative to a flexible tool, wherein said workstation processing element is capable of comparing the authority model and the actual model based upon the location and orientation of the component.

16. (Previously Presented) A system according to Claim 15, wherein said workstation processing element is capable of comparing the authority model and the actual model further based upon a temperature of the component and a temperature of a local environment of the component.

17. (Previously Presented) A system according to Claim 11 further comprising at least one machine tool capable of fabricating the component before said at least one metrology device maps the component.

18. (Previously Presented) A system according to Claim 17, wherein said workstation processing element is further capable of automatically generating at least one numerical control program from the authority model, and wherein said at least one machine tool is capable of fabricating the component based upon the at least one numerical control program.

19. (Previously Presented) A system according to Claim 11, wherein said workstation processing element is further capable of automatically and repeatedly comparing in real time actual model and the authority model as the machine operation is performed.

20. (Previously Presented) A system according to Claim 11, wherein said workstation processing element is capable of repeatedly transferring data representative of the actual model as the numerical control apparatus performs the machine operation.

21. (Currently Amended) A method of producing an assembly comprising at least one component, said method comprising:

mapping ~~the~~ a fabricated component and thereafter electronically displaying an electronic three-dimensional actual model representative of the component based upon said mapping;

comparing the actual model to an electronic display of a three-dimensional authority model;

altering a position of at least one of the actual model and the authority model based upon said comparing such that the authority model and the at least one as-built model at least partially align; and

performing a machine operation on the component based upon the altered position of the component,

wherein comparing comprises automatically and repeatedly comparing the actual model and the authority model as the machine operation is performed.